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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,777	10/18/2001	Gregory Hugh Smith	201-0564 FAM	5447

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EXAMINER	
KRONENTHAL, CRAIG W	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,777	SMITH ET AL.	
	Examiner	Art Unit	
	Craig W. Kronenthal	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed January 19, 2005, has been entered and made of record.

2. The examiner will refer to the claims as they are numbered in this amendment.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 9, and 17 have been fully considered but they are not persuasive. Applicant argues in essence that the prior art does not disclose the use of the frame rate in determining distance, acceleration, and velocity. The examiner disagrees and indicates that Lemelson et al. (PN 6,226,389) teaches determining the distance, velocity, and acceleration from derivatives of the image width with respect to time (col. 7 lines 41-47). Calculating the derivative with respect to time in essence represents the change in time between frames, which is simply the inverse of the frame rate. If one knows the change in time between frames then one knows the frame rate and vice versa.

Claim Objections

4. Claim 17 is objected to because of the following informalities:

   - On lines 7-8 of claim 17, it appears the claim was erroneously amended thereby repeating a limitation. It is believe that the words "as a function of frame rate" beginning on line 7 and ending on line 8 of this claim should be deleted.

Appropriate correction is required.

5. Claim 18 is objected to because of the following informalities:

   - On line 2 of claim 18, "deploying the counter-measure" should be replaced with "activating the counter measure" as recited in claim 17.

Appropriate correction is required.

6. Claim 19 is objected to because of the following informalities:

   - Claim 19 is dependent on claim 17, which does not disclose an airbag. The airbag is disclosed in claim 18 and therefore, it is believed that claim 19 should instead be dependent on claim 18.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lemelson et al. (PN 6,226,389) in view of Breed et al. (PN 6,324,453). (hereinafter Lemelson and Breed respectively)

Regarding Claims 1, 9, and 17: Lemelson discloses a pre-crash sensing system coupled to a counter-measure system for sensing an object comprising:

- A vision system producing a plurality of frames (col. 6 lines 31-37). The camera(s) (Fig. 1, 16) acts as the vision system.
- A video processor (image analyzing computer, Fig, 1, 19) coupled to said vision system (16), said video processor (19) determining a distance, velocity and an acceleration of the object from said plurality of frames and said rate of said frames (col. 7 lines 41-47).
- A controller (Fig. 1, 11) coupled to said vision system (16) for deploying said counter measure in response to said object distance, object velocity and said object acceleration (col. 3 lines 23-30). The microprocessor controller (11) is coupled to a vision system or camera(s) (16) and utilizes the information

computed by the image analyzing computer (19) in determining when and how to deploy a counter measure (col. 6 lines 64-67).

Lemelson does not disclose the vision system producing a plurality of frames at a rate of at least about 100 frames per second. However, Breed does disclose a vision system producing a plurality of frames at a rate of 120 frames per second (col. 22, lines 2-3). Applicant has not disclosed that a vision system producing at least 100 frames per second provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with 120 frames per second because this rate is greater than the 100 frames per second that is set as a minimum. Therefore, it would have been obvious to one of ordinary skill in this art to modify Lemelson's vision system with Breeds 120 frames per second vision system to obtain the invention as specified in claim 1. One would be motivated to use a higher frame rate to achieve real-time image analysis, so that decisions to deploy counter measures would be made quick enough to be effective in an automotive environment, such as intended by both Lemelson and Breed.

Regarding Claims 2 and 10: Lemelson as modified by Breed discloses a system as recited in claim 1 wherein said vision system (Fig. 1, 16) comprises a right side camera, and a left side camera (col. 6 lines 39-44). Lemelson discloses the use of multiple cameras (16) including those positioned on the side of a vehicle, which is understood to be either the left, right, or both.

Regarding Claims 3 and 11: Lemelson as modified by Breed discloses a system as recited in claim 2 wherein said vision system (Fig. 1, 16) comprises a right side camera, and a left side camera (col. 6 lines 39-44). Lemelson discloses the use of multiple cameras (16) including those positioned on the front of a vehicle.

Regarding Claims 4 and 12: Lemelson as modified by Breed discloses a system as recited in claim 3 wherein said front camera comprises a stereo pair of cameras (col. 6 lines 39-44). Lemelson also explains that multiple cameras could be used for stereo capabilities.

Regarding Claims 5 and 13: Lemelson as modified by Breed discloses a system as recited in claim 1 further comprising a forward looking radar-based system (Fig. 1, 14) (col. 6 lines 7-13). The radar or lidar computer (14) may be added in addition to the vision system (16). Also it may look outwards from the vehicle in all directions, including the front.

Regarding Claims 6, 14, and 18: Lemelson as modified by Breed discloses a system as recited in claim 1 wherein said counter measure comprises an airbag controller and an airbag, said airbag controller coupled to said airbag (col. 3 lines 23-30). Among the list of counter measures, Lemelson includes an airbag inflation means. Although it is not depicted in Figure 1, it is understood that there would be a control corresponding to the

airbag just as there is a control for the other mentioned counter measures, such as head light control (41), warning light control (42), horn control (43), brake servo and drive (33 and 35), and steering servo(s) and drive (37, 38 and 39, 40).

Regarding Claims 7, 15, and 19: Lemelson as modified by Breed discloses a system as recited in claim 6. Breed further discloses the system wherein said airbag comprises a side airbag (Fig. 5, 530) (col. 31 lines 23-34). A door mounted airbag system (530) reads on a side airbag.

Regarding Claims 8, 16, and 20: Lemelson as modified by Breed discloses a system as recited in claim 7. Breed further discloses the system wherein said side airbag comprises a side curtain airbag (Fig. 5, 530) (col. 31 lines 23-34). A door mounted airbag system (530) reads on a side curtain airbag as well.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Taylor (PN 5,249,157) is cited for teaching the use of frame rates to determine distance, velocity, and acceleration for the purpose of avoiding collision.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig W. Kronenthal whose telephone number is (571) 272-7422. The examiner can normally be reached on 8:00 am - 5:00 pm / Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (571) 272-7414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

06/16/05
CWK

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